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AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

- 1 1. (Currently Amended) An integrated polarization splitter having a passive portion
2 and an active portion, comprising:
3 an arrayed waveguide grating (AWG) in the passive portion, the AWG including:
4 an input coupler;
5 an output coupler; and
6 a plurality of waveguides of unequal length connecting said input and output
7 couplers;
8 wherein at least two output ports of said AWG are positioned relative to an input
9 port such that a first polarization component and a second polarization component of a
10 single channel input signal arriving at different phase fronts of a free space region at an
11 output side of said AWG are respectively received by separate ones of said output ports
12 such that said first polarization component and said second polarization component are
13 split by said AWG; and
14 wherein the passive portion and the active portion are integrated in accordance
15 with active/passive monolithic integration techniques, wherein the active portion
16 comprises at least one active device for individually modifying at least one of said first
17 polarization component and said second polarization component split by said AWG.
- 1 2. (original) The polarization splitter of claim 1, wherein said first polarization
2 component comprises a TE mode and said second polarization component comprises a
3 TM mode of said input signal.
- 1 3. (original) The polarization splitter of claim 1, wherein the polarization of input
2 signals separated in wavelength from said single channel input signal by integer multiples
3 of the free spectral range of said AWG is also split by said AWG.

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1 4. (original) The polarization splitter of claim 1, wherein at least one of said output
2 coupler and said input coupler comprises a star coupler.

1 5. (original) The polarization splitter of claim 1, wherein at least one of said output
2 coupler and said input coupler comprises a slab waveguide lens.

1 6. (original) The polarization splitter of claim 1, wherein said polarization splitter
2 performs at least one of wavelength multiplexing and demultiplexing for input signals
3 comprising more than a single channel.

1 7. (original) The polarization splitter of claim 1, wherein said polarization splitter
2 performs channel filtering.

1 8. (original) The polarization splitter of claim 1, wherein said polarization splitter is
2 fabricated from optical waveguides, each of said optical waveguides comprising:
3 a shallow etched buried rib structure passive layer; and
4 a thin layer of multi-quantum-wells (MQW) on top of the buried rib
5 structure functioning as an active layer.

1 9. (original) The polarization splitter of claim 1, wherein said polarization splitter
2 further functions as a tunable polarization controller.

1 10. (Currently Amended) An integrated polarization splitter having a passive portion
2 and an active portion, comprising:
3 an arrayed waveguide grating (AWG) in the passive portion, the AWG including:
4 at least one input means for receiving an input signal;
5 a means for coupling said input signal to said AWG;
6 a means for coupling an output signal from said AWG;
7 a plurality of waveguides of unequal length connecting said input coupling means
8 and said output coupling means; and

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9 at least two output means;

10 wherein said at least two output means of said AWG are positioned relative to
11 said at least one input means such that a first polarization component and a second
12 polarization component of said input signal arriving at different phase fronts of a free
13 space region of said output coupling means of said AWG are respectively received by
14 separate ones of said output means such that said first polarization component and said
15 second polarization component are split by said AWG; and

16 wherein the passive portion and the active portion are integrated in accordance
17 with active/passive monolithic integration techniques, wherein the active portion
18 comprises at least one active device for individually modifying at least one of said first
19 polarization component and said second polarization component split by said AWG.

1 11. (original) The integrated polarization splitter of claim 10, wherein said input signal
2 is a single channel input signal.

1 12. (original) The integrated polarization splitter of claim 10, wherein said first
2 polarization component comprises a TE mode and said second polarization component
3 comprises a TM mode of said input signal.

1 13. (original) The integrated polarization splitter of claim 10, wherein the polarization
2 of input signals separated in wavelength from said input signal by integer multiples of the
3 free spectral range of said AWG is also split by said AWG.

1 14. (Previously presented) A method of fabricating a polarization splitter having a
2 passive portion and an active portion, comprising:

3 integrating the passive portion and the active portion using an active/passive
4 monolithic integration technique, wherein the passive portion comprises an arrayed
5 waveguide grating, wherein at least two output ports of said AWG are positioned relative
6 to an input port such that a first polarization component and a second polarization
7 component of a single channel input signal arriving at different phase fronts of a free
8 space region at an output side of said AWG are respectively received by separate ones of

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9 said output ports such that said first polarization component and said second polarization
10 component are split by said AWG, wherein said active portion comprises at least one
11 active device for modifying at least one of said first polarization component and said
12 second polarization component.